



**Hewlett Packard**  
Enterprise

# MATÉRIEL HPE POUR INFRASTRUCTURES CEPH



Action Nationale de Formation - ANF  
4 Octobre 2022



## AGENDA

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- Introduction: Relation HPE avec les projets Ceph
- Description du matériel orienté SDS/Ceph
  - Challenges adressés
  - Différents serveurs pour différents besoins
  - Ecosystème HPE
  - Exemple de catalogue
- Innovation: HPE RL300

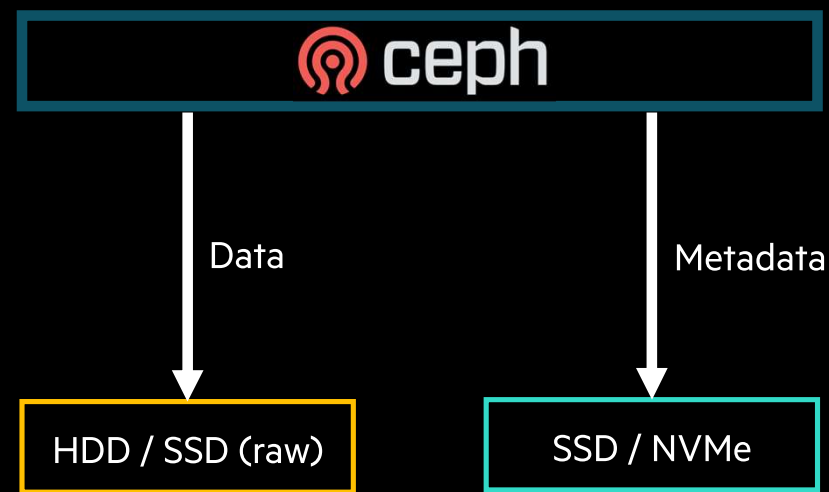
# PRÉSENTATION DU MATÉRIEL ORIENTÉ SDS/CEPH

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# CHALLENGES

- **Performances:**
  - Compute: Ratio CPU / Disque
  - Réseau: 10Gbps, 25Gbps
  - Technologies SSD et NVMe
- **Densité & Coût:**
  - Disque capacitif (jusqu'à 18To/disque)
  - Maximiser le stockage par nœud pour optimiser les coûts
  - Eviter les longues durées de reconstruction en cas de panne
- **Administration & Maintenabilité:**
  - IaC (Infra as Code): Ansible & Terraform
  - HPE OneView
- **Sécurité:**
  - Silicon root of trust



*In large scale storage clusters, hardware failure is an expectation, not an exception.*

# HPE PROLIANT DL325 GEN10 PLUS SYSTEM

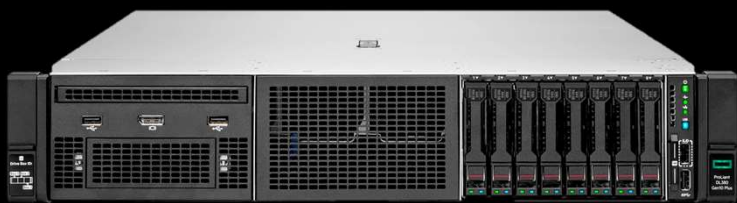


## DL325 Gen10 Plus v2

<b>Size</b>	<ul style="list-style-type: none"><li>• 1U rack</li></ul>
<b>Compute</b>	<ul style="list-style-type: none"><li>• Up to 1 AMD EPYC 7xx3 Series</li><li>• Up to 64 Cores (2.5 GHz) per CPU</li></ul>
<b>Memory</b>	<ul style="list-style-type: none"><li>• Up to 16x DDR4, up to 3200 MT/s, 8 channel per CPU</li><li>• Up to 4.0 TB (14x256GB)</li></ul>
<b>Storage</b>	<ul style="list-style-type: none"><li>• Up to 10 SFF SAS/SATA/NVMe</li><li>• Up to 4LFF SAS/SATA/NVMe</li></ul>
<b>Network</b>	<ul style="list-style-type: none"><li>• 10/25Gb networking adapter</li><li>• 100Gb networking adapter</li></ul>

# HPE PROLIANT DL38X GEN10 PLUS SYSTEM

## DL380 & DL385



	ProLiant DL380 Gen10 Plus	ProLiant DL385 Gen10 Plus v2
<b>Size</b>	<ul style="list-style-type: none"> <li>• 2U rack</li> </ul>	<ul style="list-style-type: none"> <li>• 2U rack</li> </ul>
<b>Compute</b>	<ul style="list-style-type: none"> <li>• Up to 2x 3<sup>rd</sup> Generation Intel® Xeon® Processor Scalable family</li> <li>• Up to 40 Cores (2.3 GHz) per CPU</li> </ul>	<ul style="list-style-type: none"> <li>• Up to 2x 2nd Generation AMD EPYC 7000 Series processors</li> <li>• Up to 64 Cores (2.45 GHz) per CPU</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>• Up to 32x DDR4, up to 3200 MT/s</li> <li>• Up to 8.0 TB (32x256GB)</li> </ul>	<ul style="list-style-type: none"> <li>• Up to 32x DDR4, up to 3200 MHz</li> <li>• Up to 8TB (32x256GB)</li> </ul>
<b>Storage</b>	<ul style="list-style-type: none"> <li>• Max of 36 (24f + 8 int + 4r) SFF SATA/SAS; up to 32 NVMe SSDs*</li> <li>• Max of 20 LFF drives (12 front+4 internal + 4 rear) SATA/SAS LFF</li> <li>• NVMe U.2 &amp; U.3 SSD support; NVMe AIC, M.2 enab. No uFF options</li> </ul>	<ul style="list-style-type: none"> <li>• Max of 38 SFF drives: 4 SFF bay with 8 SFF mid tray drives and 6 SFF rear drive bay</li> <li>• Max of 20 LFF drives: 2 LFF with optional 4 LFF mid-plane and optional 4 LFF</li> </ul>
<b>Network</b>	<ul style="list-style-type: none"> <li>• 10/25Gb networking adapter</li> <li>• 100Gb networking adapter</li> </ul>	<ul style="list-style-type: none"> <li>• 10/25Gb networking adapter</li> <li>• 100Gb networking adapter</li> </ul>

# HPE APOLLO 4200 GEN10 PLUS SYSTEM



## Apollo 4200 Gen10 Plus

Size	<ul style="list-style-type: none"><li>• 2U rack</li></ul>
Compute	<ul style="list-style-type: none"><li>• Up to 2 Intel® Xeon® 3rd Gen Processor</li><li>• Up to 32 Cores (2.3 GHz) per CPU</li></ul>
Memory	<ul style="list-style-type: none"><li>• Up to 24x DDR4, up to 3200 MT/s, 8 channel per CPU</li><li>• Up to 3.0 TB (24x128GB)</li></ul>
Storage	<ul style="list-style-type: none"><li>• Up to 24 LFF or 48 SFF SAS/SATA with standard front two HDD Cage 1 and 2</li><li>• Optional Drive Cage 3 upgrades: 4 LFF or 8 SFF Tri-mode*</li><li>• Optional Rear Cage 4/5 upgrades: Up to 4 SFF Tri-mode*</li><li>• Up to 4 HPE Smart Array Gen10 Plus Controllers</li></ul>
Network	<ul style="list-style-type: none"><li>• 10/25Gb networking adapter</li><li>• 100Gb networking adapter</li></ul>

# HPE NS204I-P OS BOOT DEVICE

- Key Features

- RAID1 OS Boot device
- (2) NVMe M.2 SSDs of 480 GB included, RAID 1 stand-up PCIe card fits most platforms
- Utilizes native OS NVMe inbox drivers – no custom driver development
- Supporting Gen10 and Gen10Plus platforms

- Workloads

- VMware Virtualization
- Microsoft Storage Spaces Direct
- Required storage density

- Why are we doing it?

- Separate OS and Data planes requested by customers

- Market Trends:

- HPE customers want to utilize all drive bays for data storage
- Need for dedicated HW RAID 1 OS boot solution
- OS Vendors starting to deprecate USB and SD Boot support





# ECOSYSTÈME HPE

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# HPE COMPUTE MANAGEMENT PORTFOLIO

HPE iLO

Embedded

Embedded Server Management that enables you to **securely** configure, monitor and update your HPE servers from anywhere



HPE OneView

On-premises

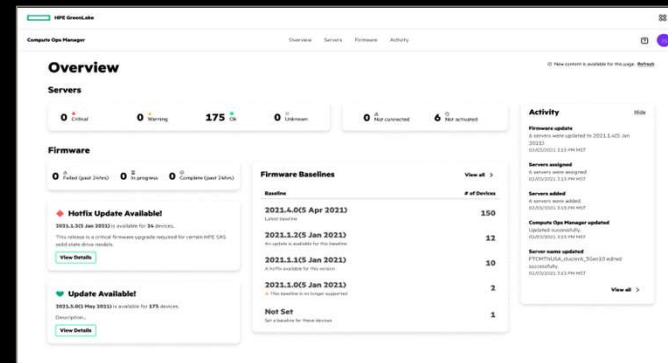
Integrated IT infrastructure **management** software that automates IT operations and **simplifies** infrastructure lifecycle management across compute, storage, and networking.



HPE Compute Ops Management

SaaS

HPE Compute Ops Management securely delivers **unified** compute operations as-a-service from edge-to-cloud



# SILICON ROOT OF TRUST

## Idéal Pour :

- Gestion de serveur sans tracas et intégration dans l'écosystème de gestion d'infrastructure en utilisant les normes de l'industrie
- Integrated Lights-Out (iLO) est une technologie embarquée livrée avec les serveurs HPE. C'est la base de l'intelligence des serveurs HPE. Cette technologie est une combinaison de l'ASIC iLO qui fait partie de la carte serveur et du microprogramme.

## Fonctions :

- Prise en main à distance quelque soit l'état du serveur et redémarrage
- Silicon Root of Trust pour un démarrage sécurisé avec possibilité de revenir automatiquement à un micrologiciel en bon état
- Support d'OpenLDAP
- Media virtuels

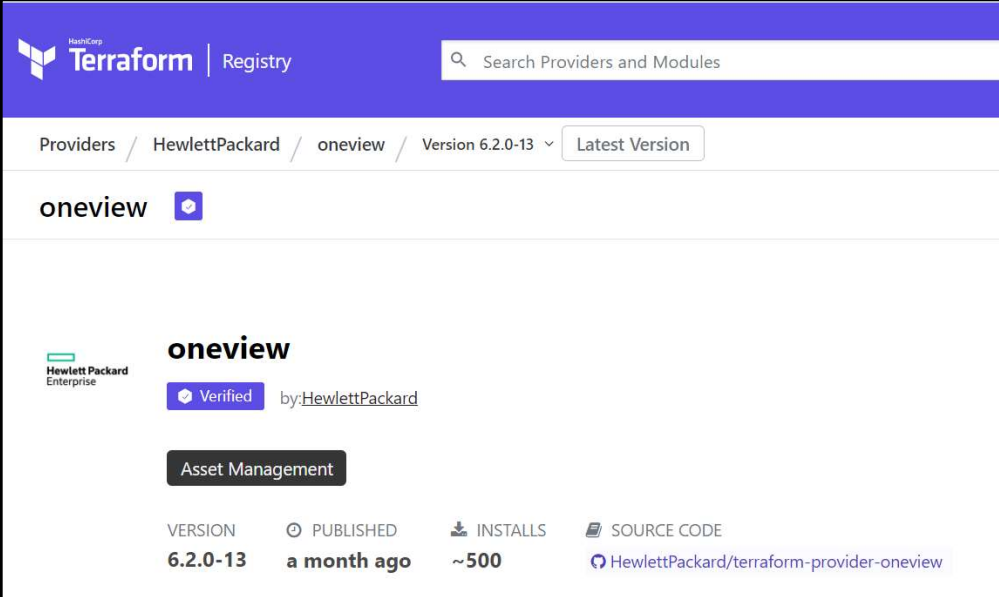
Gardez le contrôle total de votre serveur sécurisé, en le gérant de manière proactive avec facilité et une intervention manuelle minimale



# HPE ONEVIEW TERRAFORM PROVIDER VERIFIED BY HASHICORP

The HPE OneView Terraform Provider is verified by HashiCorp, asymmetrically encrypted and offers superior HPE OneView automation capabilities. It also supports the HCL2 language, which simplifies coding.

- HashiCorp verification enables the HPE OneView Terraform Provider to be included in the Terraform Registry and support for the “provider source” attribute in Terraform. Which enables automated installation of HPE OneView Terraform Provider releases.
- The HPE OneView Terraform provider is also asymmetrically encrypted, using GPG code encryption to ensure HPE source code security.
- Support for HPE OneView appliance settings resources has been added, such as ID Pools, Firmware Drivers and Labels.
- The HPE OneView Terraform Provider is available in multiple locations:
  - HPE GitHub  
<https://github.com/HewlettPackard/terraform-provider-oneview>
  - Terraform Registry  
<https://registry.terraform.io/providers/HewlettPackard/oneview/latest>
  - Container Image  
<https://hub.docker.com/repository/docker/hewlettpackardenterprise/hpe-oneview-sdk-for-terraform>



The screenshot shows the Terraform Registry page for the HPE OneView provider. The page is titled "oneview" and is verified by HashiCorp. It displays the version "6.2.0-13" and the publisher "HewlettPackard". The page also shows the number of installs (~500) and the source code link "HewlettPackard/terraform-provider-oneview".

HashiCorp Terraform | Registry

Search Providers and Modules

Providers / HewlettPackard / oneview / Version 6.2.0-13 ▾ Latest Version

oneview

Hewlett Packard Enterprise

oneview

Verified by: HewlettPackard

Asset Management

VERSION 6.2.0-13 PUBLISHED a month ago INSTALLS ~500 SOURCE CODE HewlettPackard/terraform-provider-oneview

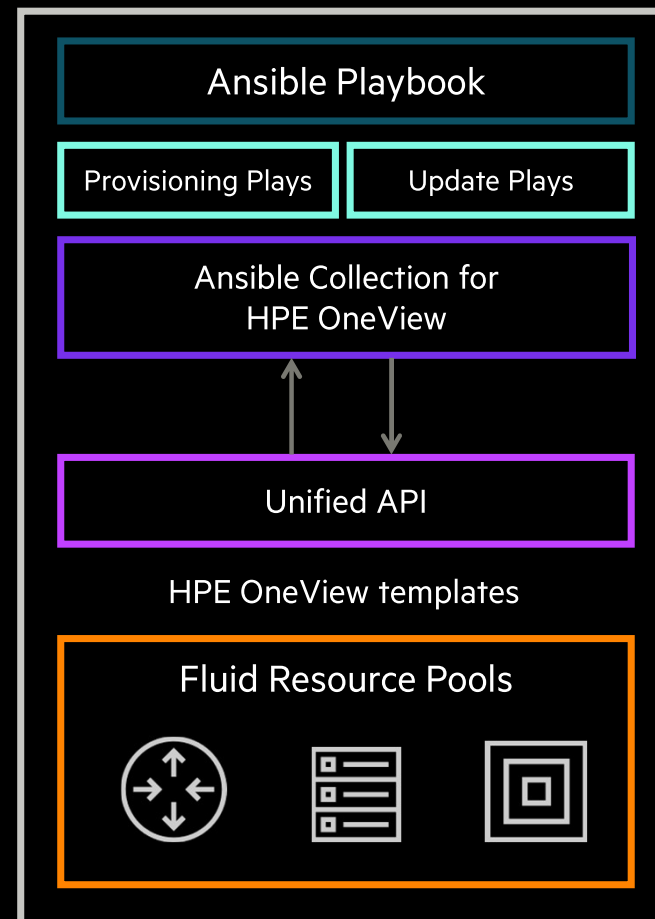
# HPE ONEVIEW ANSIBLE COLLECTION CERTIFIED BY RED HAT

The HPE OneView Ansible Collection is certified by Red Hat, and enables HPE OneView and Ansible automation to provide a powerful and complete automation solution.

- Red Hat certification enables the HPE OneView Ansible Collection to be included in Red Hat's automation hub. Red Hat also provides technical support to the collection for all Automation Hub subscribers
- The recent introduction of the HPE OneView Ansible collection is fully aligned with the Ansible Collection format and the newest Ansible features
- Support for additional HPE OneView appliance settings resources and enhanced support for firmware configuration have been added

The HPE OneView Ansible collection is available in multiple locations:

- Ansible Automation Hub:  
<https://www.ansible.com/products/automation-hub>
- HPE GitHub Team:  
<https://github.com/HewlettPackard/oneview-ansible-collection>
- Container Image:  
<https://hub.docker.com/repository/docker/hewlettpackardenterprise/hpe-oneview-sdk-for-ansible-collection>



# BROAD ECOSYSTEM EASILY INTEGRATES YOUR PREFERRED TOOLSET

Through HPE OneView software-defined intelligence

Future proofing your datacenter  
Reliable integration with the latest and most popular third party and open source tools

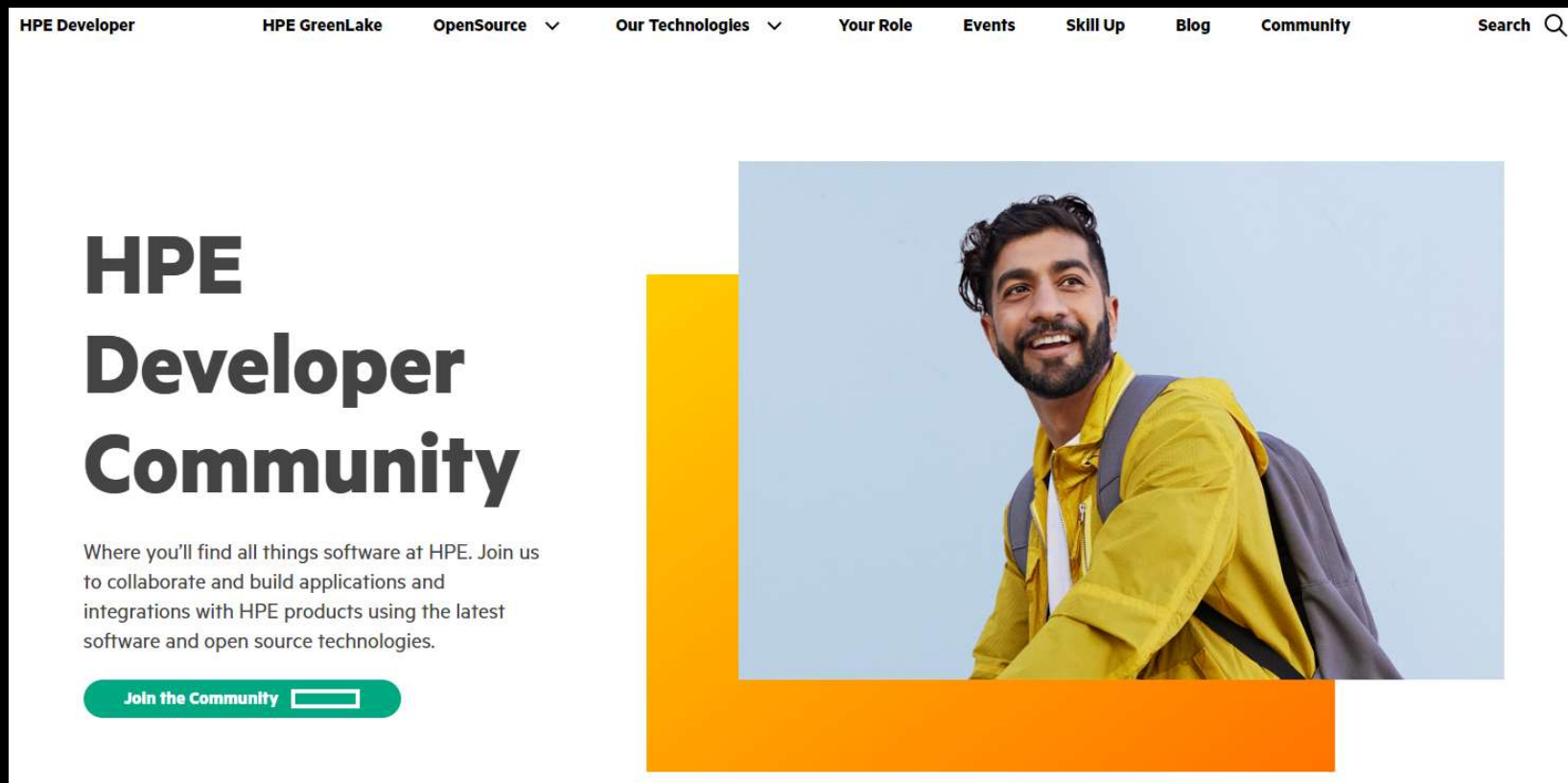


**COMPOSE** for any workload  
increase agility by automating  
infrastructure for DevOps

**TRANSFORM** to software-  
defined  
Improve productivity by  
simplifying IT Ops and Facilities

**CONNECT** from core to cloud  
Gain intelligent insights  
by optimizing across clouds

# JOIN THE DEVELOPER COMMUNITY!



The screenshot shows the HPE Developer Community website. The navigation bar at the top includes links for HPE Developer, HPE GreenLake, OpenSource (with a dropdown arrow), Our Technologies (with a dropdown arrow), Your Role, Events, Skill Up, Blog, and Community. A search icon is located on the far right of the navigation bar. The main content area features a large heading 'HPE Developer Community' on the left. Below the heading is a paragraph: 'Where you'll find all things software at HPE. Join us to collaborate and build applications and integrations with HPE products using the latest software and open source technologies.' At the bottom of this text is a green button with the text 'Join the Community' and a white rectangular icon. To the right of the text is a large image of a smiling man with a beard, wearing a yellow jacket and a grey backpack, looking towards the camera. The image is partially overlaid by a yellow and orange L-shaped graphic element.

<https://developer.hpe.com>

# EXEMPLE DE CATALOGUE

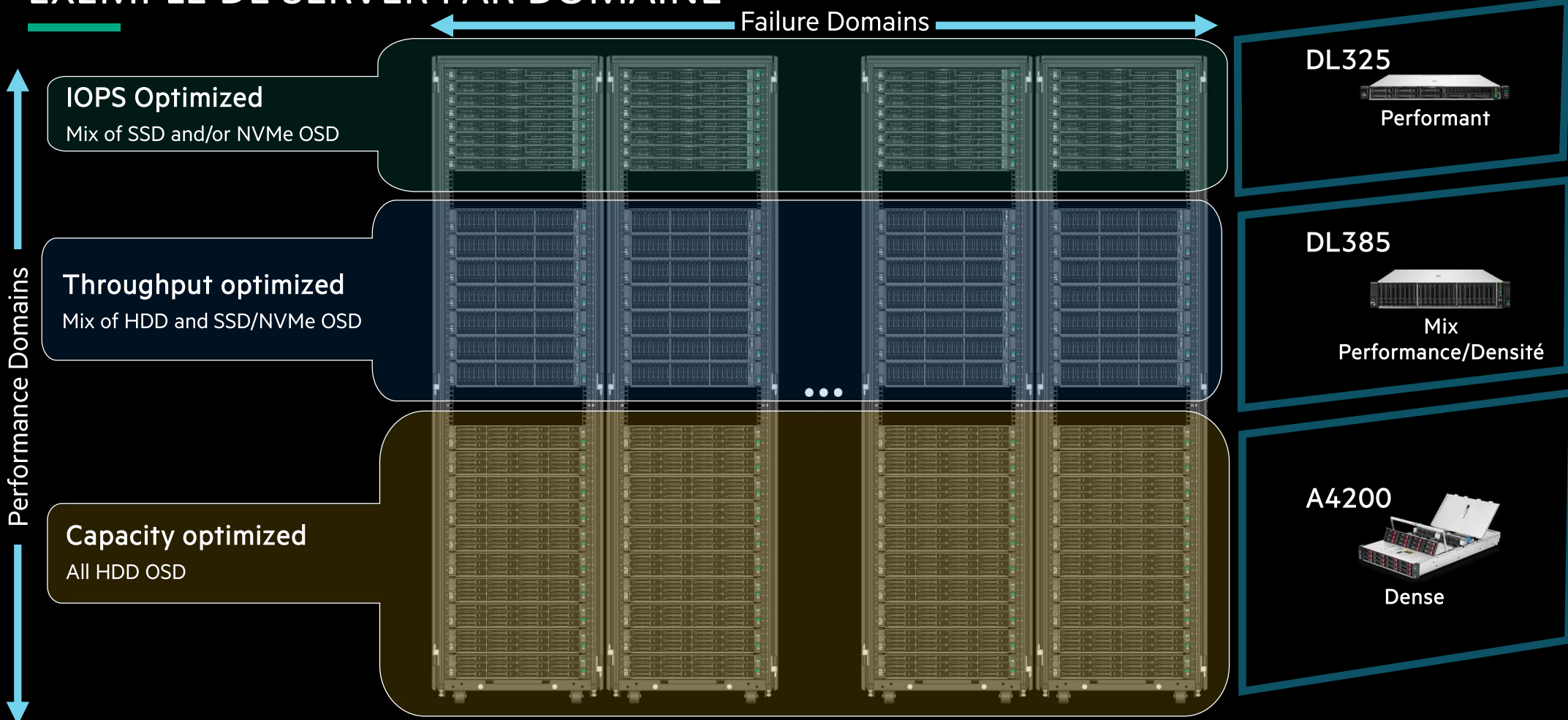
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Orienté Performance et Stockage








# EXEMPLE DE SERVER PAR DOMAINE



 Source

# EXEMPLE DE CATALOGUE

IOPS Optimized	Throughput optimized	Capacity optimized
DL325 Gen10 Plus v2 – 8SFF	DL385 Gen10 Plus v2 – 24SFF	Apollo4200 Gen10 Plus - 24LFF
		
<ul style="list-style-type: none"> <li>• 1x AMD EPYC 7373X 16-core / 3.1 GHz</li> </ul>	<ul style="list-style-type: none"> <li>• 1x AMD EPYC 7373X 16-core / 3.1 GHz</li> </ul>	<ul style="list-style-type: none"> <li>• 2x Intel® Xeon® Silver 4314 16-core / 2.4 GHz</li> </ul>
<ul style="list-style-type: none"> <li>• 8x HPE 16 GB DDR4-3200 128 GB</li> </ul>	<ul style="list-style-type: none"> <li>• 8x HPE 16 GB DDR4-3200 128 GB</li> </ul>	<ul style="list-style-type: none"> <li>• 16x HPE 16 GB DDR4-3200 256 GB</li> </ul>
<ul style="list-style-type: none"> <li>• 2x HPE 480 GB SATA 6G MU SFF SSD (OS)</li> <li>• 8x HPE 3.2TB NVMe MU SSD SFF</li> </ul>	<ul style="list-style-type: none"> <li>• 2x HPE 480 GB SATA 6G MU SFF SSD (OS)</li> <li>• 16x HPE 2.4TB SAS 10K SFF HDD</li> <li>• 3x HPE 800 GB NVMe SSD SFF</li> </ul>	<ul style="list-style-type: none"> <li>• 2x HPE 480 GB SATA 6G MU SFF SSD (OS)</li> <li>• 24x HPE 14 TB SAS 12G LFF HDD</li> <li>• 4x HPE 1.6 TB NVMe SSD SFF</li> </ul>
<ul style="list-style-type: none"> <li>• 1x HPE Ethernet 10/25Gb 2-port</li> </ul>	<ul style="list-style-type: none"> <li>• 1x HPE Ethernet 10/25Gb 2-port</li> </ul>	<ul style="list-style-type: none"> <li>• 1x HPE Ethernet 10/25Gb 2-port</li> </ul>
<p>25,6 TB of NVMe</p>	<p>38,4 TB of HDD (Data) 2.4 TB of NVMe (Journals)</p>	<p>336 TB of HDD (Data) 6.4 TB of NVMe (Journals)</p>

# HPE PROLIANT RL300 GEN11

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The next generation of efficient compute



Introduction du

# HPE ProLiant RL300 Gen11

Conçu pour les fournisseurs de services et les entreprises du numérique "cloud native"



## + cœurs, - énergie

Consomme moins d'énergie avec jusqu'à 128 cœurs par *socket*

## Performance prédictible

Cœurs *mono-thread* à vitesse d'horloge constante

## Management flexible

Construit sur la base du légendaire HPE ProLiant, avec la flexibilité pour poursuivre et étendre la stratégie open-source

# HPE PROLIANT RL300 GEN11 SERVER

Plus de cœurs, moins d'énergie

Tirez le maximum de revenus des charges de travail hautement parallèles grâce à un nombre de cœurs par socket inégalé dans le secteur.

Plus de cœurs **Jusqu'à 128** Nombre de cœurs par socket le plus élevé du secteur

Moins d'énergie Les processeurs Ampere® s'appuient sur une architecture économe en énergie, offrant des performances compétitives à des niveaux inférieurs de consommation d'énergie.

Évoluez du cœur vers la périphérie avec une infrastructure qui équilibre les performances, le prix et la consommation d'énergie.

Contribue aux objectifs de durabilité en réduisant la consommation d'énergie et les coûts.



# HPE PROLIANT RL300 GEN11 SERVER

## Management flexible

Choix du management avec les fondations HPE ProLiant, pour la croissance de l'espace cloud-native

### HPE iLO

Expérience cohérente  
à travers le portfolio HPE ProLiant



### OpenBMC

Poursuivez et étendez  
votre stratégie open-source

#### Sécurité et performance

La prochaine génération de management de serveurs HPE inclus :

- le Silicon Root of Trust,
- le verrouillage de la configuration du serveur,
- l'effacement sécurisé par un bouton
- et plus encore

#### Conception ouverte, flexible

Tirez parti de la communauté OpenBMC pour créer, développer et maintenir votre implémentation, à votre rythme et avec les ressources que vous contrôlez

# AMPERE'S EXPANDING SOFTWARE ECOSYSTEM

*Broad Developer Ecosystem with 135+ Software Applications Undergoing Daily Automated Functionality and Performance Testing*

Applications



Databases



Infrastructure Tools & DevOps



Networking & Storage



Languages & Runtimes



Orchestration, Virtualization & Containers



Operating Systems



Source: From Ampere Computing - As of May 2022

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